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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,931	10/05/2005	Zhiguo Su	37137-224348	6508
26694	7590	01/17/2008		
VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998			EXAMINER MONSHIPOURI, MARYAM	
			ART UNIT 1656	PAPER NUMBER
			MAIL DATE 01/17/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/551,931	<b>Applicant(s)</b> SU ET AL.	
	<b>Examiner</b> Maryam Monshipouri	<b>Art Unit</b> 1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.  
4a) Of the above claim(s) 4 and 5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some    \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/07</u> . | 6) <input type="checkbox"/> Other: ____  |

Applicants' arguments filed on 10/26/2007, have been fully considered and are deemed to be persuasive to overcome some of the rejections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. Claims 1-3, 6-13 are still pending and under examination. Claims 4-5 are withdrawn as drawn to non-elected invention.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 6-13 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Hu (cited previously) in view of Bonhard (cited previously) according to previous office action. In traversal of this rejection applicant argues the following: **(1)** that there is no motivation to combine the mentioned references because Hu states that reacting hemoglobin molecules with serum albumin utilizing dialdehyde as a cross linking agent results in heterogeneous products which are difficult to characterize and trigger immunogenic response in the host and Bonhard patent, in contrast to Hu's findings, discloses utilizing dialdehydes for conjugating hemoglobin molecules with serum proteins. Therefore, in view of the fact that Hu and Bonhard have contradictory views about utilizing dialdehyde as a cross linking agent one of ordinary skill in the art, at first glance, will be discouraged to combine said teachings to arrive at the instant invention. **(2)** The Hu article utilizes bovine hemoglobin for its low immunogenicity. There

is no motivation that human hemoglobin would have the same property or can be utilized in the conjugate of Hu article. According to applicant, Bonhard also lacks a teaching directed to conjugation of human hemoglobin and human serum albumin. Examples 11 and 12 of Bonhard merely disclose crosslinking of hemoglobin with human serum containing 5% of protein and applicant expresses confusion as to why a serum containing 5% of protein is assumed by one of ordinary skill in the art to include human serum albumin. Applicant also disagrees with the examiner that structural similarity between human and bovine hemoglobin can be relied upon for preparing functional human Hb and human serum albumin conjugates because in the field of immunology, structural similarity of the antigen does not warrant similar immune response.

(3) In examples 12 and 13 of the specification applicant has demonstrated that claimed products (a) display low immunogenic and toxicity and (b) work as substitute for the whole blood, and said demonstrations are unexpected results.

Therefore, applicant concludes that due to lack of motivation to combine cited references and due to achieving unexpected results, the rejection should be withdrawn.

These arguments were fully considered but were found **unpersuasive**. In response to applicant's **first** argument, it should be noted that Hu and Bonhard references were not cited because of the nature of crosslinker utilized but for demonstration of the motivation to replace the bovine serum albumin with human serum albumin. Further, as applicant himself/herself admitted other cross linkers beyond deadeye, such as MBS (see page 275 of Hu) were taught in Hu's reference.

With respect to applicant's **second argument**, point is well taken that products of similar structure such as bovine or human hemoglobin, may not have necessarily similar immunogenicity. However, it should be pointed out that instant claims are not restricted to human hemoglobin conjugates and therefore applicant's traversal arguments directed to properties of human hemoglobin and their dissimilarity to bovine hemoglobin are irrelevant. If examiner in her previous office action mislead applicant by referring to human species of hemoglobin conjugates she respectfully regrets said misunderstanding. Applicant is additionally reminded that it is well known in the art that serum is made of saline buffer and proteins, 50% of which being serum albumin protein. Since buffer cannot be crosslinked then any conjugate of serum must comprise serum proteins which must comprise some serum albumin. Therefore, to one of ordinary skill in the art, is motivating to replace bovine serum albumin of Hu and replace it with human serum proteins (including human serum albumins) of Bonhard, as explained previously, in order to obtain conjugates with potentially function better in some mammals including humans.

With regards to applicant's **third argument**, it is true that applicant has provided some preliminary results that his/her conjugates may potentially work as blood substitutes but said results have not been compared to prior art blood substitutes in vigorous in vivo experiments, displaying significant improvement in half life, immunogenicity etc., in order to establish their unexpectedness.

Therefore, in view of the response provided above in addition to explanations provided previously, the rejection is maintained.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maryam Monshipouri whose telephone number is (571) 272-0932. The examiner can normally be reached on Tues.-Fri., from 7:00 a.m to 5:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleene Kerr Bragdon can be reached on (571) 272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

*M. Monshipouri*

Maryam Monshipouri Ph.D.

Primary Examiner

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